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ABSTRACT

This report presents an overview of the distance education systems currently operating in Europe. The first chapter discusses the factors influencing growth of job training requirements in Western Europe. The qualitative trend in training requirements is discussed in chapter two, particularly new consumer habits. The role of the media in self-instruction and independent study is examined in chapter three, as well as the effect of media on institutions and mass media selection in education and industry. Chapter four outlines a new comprehensive infrastructure for Europe that includes regional resource and grouping centers, communications satellites for training, data networks, and international organizations. Chapter five discusses distance education in Europe, new technical systems, and the development of legislation and regulations. Finally, the Council of Europe policies are described for the areas of study, research and training, organization and information, regulation, and policy requirements. It is concluded that a new organization of distribution systems and information networks for European distance education must be clarified if the changing dimensions of training needs and continuing education are to be accommodated. (34 references) (DB)

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CHARTING THE COURSES OF DISTANCE EDUCATION IN A WIDER EUROPE

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Charting the courses of distance education in a wider Europe

by Jacques PERRIAULT

Introduction

For some years multimedia production schemes for training applications have been flourishing. Distance teaching institutions are expanding under the influence of increased demand. The European Communities have contributed to this escalation by setting up incentive programmes. Today, this constantly changing scene is difficult to survey with clarity, yet this must be done if the national and international agencies are to frame policies.

The media have undoubtedly established themselves in training; the study will open with this initial observation and go on to analyse it extensively. They appreciably alter the relations between trainers and trainees by diversifying the types of distance relationships. This can involve a time lag - an educational software pack is put together before a student uses it, geographical remoteness - widely separated persons can confer together by television link, or both, as with satellite broadcasting of an educational programme produced beforehand.

Questions of production and distribution now take precedence over those of content. Considering the scale of the investments required, there is no question of setting up a new system for each new content. On the contrary, like the practice in industry, distance teaching institutions now endeavour to provide endless variations in instruction with the same production, broadcasting and distribution software.

The second preliminary observation is that software, under pressure from the media, is becoming the central problem of distance education. This raises a further problem: should one group of infrastructures be specified for higher education and another for continuing education? The question is not very meaningful in logistical terms because in all cases lessons must be sent out, exercises corrected, questions answered, trainee motivation analysed and examinations administered. It would be be incongruous to build up specific systems in parallel, especially as European universities have a growing commitment to increasingly engaging in continuing education activities (Council of Europe, 1987).

The third introductory point is that the logistics required concern both higher education and continuing education, but this raises a problem of proportioning. For how many people are the production and distribution systems to be designed? Where higher education is concerned the projections are fairly well known, but less so for continuing education. There, the needs are patently enormous and far beyond the capacity of "face-to-face" courses alone. Here, the role of distance teaching is inevitable.

The fourth observation is therefore that logistics will be scaled to the potential requirements of continuing education. It is assumed for present purposes that the specific needs of higher education with regard to logistics will be met by incorporation.

The study will accordingly proceed from these observations in an effort to elucidate somewhat the actual organisation of the system which is growing up in Europe. The question of scale will be discussed first of all, with reference to forecasts of the trend in continuing training needs, the crux of the analysis (Chapter 1). Attention will then be paid to the qualitative trend in requirements and to new consumer habits (Chapter 2). The question of the media will then be approached from various angles: role in learning, industrial production, effects on institutions (Chapter 3). It will then be possible to outline the features of a new European infrastructure for distance education (Chapter 4) and hence to propose an ambitious but feasible operation to systematise this area, to chart its courses as it were (Chapter 5). On that basis, suggestions will be made with a view to the framing of a distance education policy by the Council of Europe (Chapter 6).

As the current profusion of projects makes it impossible to produce a conspectus, I have studied some few innovations which I regard as having potential for the future and which will be presented in the body of the report, although there will of course be scope for constant references to the general context.

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Chapter 1

Rescaling of training requirements

In the aftermath of the recession, most industrialised countries have assessed the skill standard of their working population and made forecasts of future development which very clearly indicate the training requirements. However, a comprehensive survey has yet to be made.

In the Federal Republic of Germany, forecasts made before the emergence of reunification prospects predicted that the working population would decrease from its 1982 level of 25.6 million to 25.3 million in 2000. Approximately one million jobs would be lost in the sectors of agriculture, building, transport and trade while administration and a variety of commercial services would form labour-intensive sectors with over 1.2 million jobs.

Denmark is preparing to meet a large increase in the demand for ongoing vocational training. The workforce participation of women is growing, and part-time employment is noticeably on the increase. Unemployment, which is expected to decrease as from 1990, will chiefly affect unskilled workers.

Finland is experiencing stronger and stronger vocational training demands from adults who have not received adequate basic training and are confronted with structural changes in industry and proliferation of new technologies.

In the United Kingdom the total employment level should rise from the 1987 figure of 25 million to 26.4 million in 1995, an increase marked by a strong upward trend in employment in services, particularly those aimed at the individual consumer, a growth in female employment and the expansion of part-time employment. The main demand concerns managers, executives and researchers. The retraining demand is very high. A national programme called PICKUP which serves this function is increasing its enrolment by some 11% per year.

Ireland, with 1992 in the offing, is relying much more on in-service than initial training, particularly for unskilled young people, the long-term unemployed, women taking up employment and the high skills entailed by the development of the new technologies.

Italy faces a situation where adults having broken off their studies are thronging to resume them either for the sake of occupational advancement or to broaden their general education. The female component of this demand is on the increase. The development of the Mezzogiorno economic aid area and Southern Italy in general is also a powerful stimulus to the expansion of training.

The Netherlands expect a working population increase from 4.55 million in 1986 to 5.15 million in 2000. The sectors losing momentum are industry, road transport and unskilled labour. Conversely, the expanding sectors are linked with trade, health and most remarkably with higher education (91,000 jobs predicted). The use of computers and sophisticated machinery has generated a greater need for skilled staff. The percentage of highly-trained people in active ages had risen from 4.5% in 1960 to 16.5% by 1985.

Portugal is expected to have some 750,000 unfilled vacancies in 1992. It is short of skilled manpower, but the discrepancy could be made up by intensifying preparatory vocational training and higher technical education.

In France, the working population growth estimates according to training level are as follows:

Active population	1982	%	2000	%
Training levels				
I & II	1,181,000	5.5	2,617,000	10.6%
III	1,202,000	5.6	2,450,000	10.0
IV	2,383,000	11	4,296,000	17.4
V	4,766,000	22.2	7,377,000	30.0
VI	11,935,000	55.6	7,886,000	32.0

Even today, three out five young people end their initial training at level VI or V:

- 130,000 without training (level VI);
- 380,000 with a BEP or a CAP, the vocational education certificates for lower and upper secondary levels respectively (Source: HCEE 1988)

According to a moderate scenario, in 2000 the numbers leaving school at level VI may be cut to 120,000 and at level V to 170,000.

Here also, the demand relates to the new technologies eg biotechnology, fine chemicals and new materials, and to cross-disciplinary tertiary specialisations which are vital to industrial development, such as product quality control, design, technical sales engineer skills and management of innovation.

The main growth factors of training demand

In Western Europe the growth in training requirements is related to several factors. The first is demographic; most countries are grappling with the problems posed by growth in the employable population, as a result of which the numbers entering active life are constantly in excess of those retiring. Furthermore, several countries are witnessing an expansion in female employment which used to be only minimal.

The second factor is the stabilisation of unemployment. The better qualified categories are not so vulnerable, but the less qualified continue to be affected, which highlights the magnitude of the training responsibility to be faced by all countries in the years ahead.

The third factor is the general rise in the required skill standard compounded by a shift in its orientation. The decline of industrial employment coincides with growth in the services.

A general and convergent trend has been taking shape for some years in the various member states. The need for lifelong continuing training is universally recognised. Many higher education systems have accordingly framed lifelong training policies, and these are accompanied by specific arrangements in some countries.

The economies of all West European countries are experiencing a decrease in the demand for lower-level training and a corresponding rise in the demand for the most advanced qualifications. The trend is nevertheless liable to be more contrastive with regard to the intermediate categories: for instance, the demand for tertiary technical qualifications should stagnate or even decline in Germany while increasing in Ireland and Portugal.

In certain cases the social demand for training exceeds the actual need, as in Germany, the excess being due to the large resources which this country can afford to release for the training system.

Hitherto inadequate solutions

The various countries have responded to this general problem of the rising training standard by introducing suitable policies. The resources made available, though large, are still not nearly sufficient. As an example, it is interesting to observe the response made to this finding by the French training systems, ie those of the state education and vocational training authorities. Where state education is concerned, the school leaving estimates given above are expected to decrease within ten years (by 2000) with 120,000 leaving at level VI and 170,000 at level V. This presupposes a generalisation of the technology classes in quatrième and troisième (end of the lower secondary course), which will supplant the classes leading to the CAP. The numbers leaving higher courses will increase to 800,000.

Let us turn to continuing training. The GRETA system (groups of schools in France which provide this additional form of training) now cater for 570,000 trainees per year, and the CNED (National Distance Education Centre) provides training for 230,000 adults. The CNAM (Conservatoire national des arts et métiers), the universities and the "Grandes Ecoles" or élite universities for their part administer continuing training for 344,000 adults. The activity of the state education system thus concerns some 1,144,000 adults at present (DELWASSE, 1990).

The vocational training system co-ordinates the efforts of the public and private bodies specifically dealing with adults' continuing training. The numbers involved have risen rapidly in recent years:

1984	9,000
1987	13,400
1988	14,400

1,100 of these bodies are public and 50% come under the state education authority. The principal public providers of continuing education are as follows:

Establishments	Enrolments	Centres
GRETA (School groups providing continuing education)	570,000	334
Universities	344,000	100
CNED (National Distance Education Centre)	230,000	8
CNAM (Conservatoire national des arts et métiers)	90,000	44
AFPA (National Vocational Training Assocation)	120,000	350
Consular bodies	250,000	250
Craft associations	43,000	60
Agricultural associations	10,000	37
Total	1,657,000	1,183

In 1988, 6 million people received 650 million hours of training both in the public and in the private sector. But compared to the 15 million or so actively employed persons with level V and VI qualifications, this number, though high in absolute terms, represents not even half the numbers involved in continuing training. The public operators cater for approximately one quarter of trainees and about a tenth of the population in question. An adjustment of scale should therefore be contempla ed to enable the European countries to meet their potential training demand.

Consequently, whatever the outlook, it should be considered whether arrangements other than increased "face-to-face" teaching, whether these are of an academic or special-purpose nature, might usefully further the extensive task in hand. That is why the development of distance education has such significance at present for the economic and social interests at stake.

Chapter 2

The qualitative trend in requirements

Attendance-based arrangements will not suffice to meet the considerable training needs of the active population, as it is inconceivable to increase their capacity tenfold within a reasonable time. Other systems will therefore be called upon to assist in the task, particularly distance education. An explanation would be in order, for to many people's minds this method of conveying knowledge is inferior to the other for various reasons, either because it was initially used for the education of disabled children or because it is regarded merely as a "second chance". In the 1970s the Open University undeniably provided a new style of open access to knowledge by making available an arrangement originating from traditional correspondence teaching and combining it with the use of new media and new self-instruction methods.

It is therefore legitimate to ask whether distance education is being perfected and developed or whether we are witnessing the emergence of a radically different system for storing and apportioning knowledge which at present settles for distance teaching methods but will develop on its own pattern. Three questions arise in this respect. The first concerns the trend in the quality of requirements set by the consumers. The second is the role which the media are destined to play in learning, and the third relates to the dissemination of the knowledge in question.

The manifold and ceaseless technological advances in domestic and occupational life are the source of very many knowledge gaps. Insecurity of employment and the threat of unemployment highlight the risk of qualifications being debased and make those concerned aware of the need for remedies. Conventional training, generated by and perpetuated in a society where the rate of updating of knowledge was slower, will be increasingly hard put to fulfil ever more highly diversifed needs with constantly regenerated knowledge, particularly in science and technology.

This is true of many of the attainments now essential to the operation of firms, which are at once extremely diversified and advanced. For instance, the distance training in biotechnology developed by the Rennes CNED breaks down into 16 courses ranging from cosmetics to meat-preserving techniques. These skills often become very quickly obsolete, so that constant updating is required. Lastly, it should be stressed, they are built up not only by the normal scientific bodies but also by the firms themselves, whether large, small or medium-sized, which acquire and disseminate their technical culture in this way.

We are also witnessing a marked upward trend in individual demand for training, increasingly hard to please and wanting types of training meticulously tailored to the need felt by the individual. In an institution such as the CNED, adult enrolment is prompted more and more by the acquisition of a skill and less and less by the wish to obtain a certificate.

This dual tendency to proliferate and diversify makes it hard to see how an instructor under such constraints could satisfactorily and consistently impart course content in an ordinary teaching situation. Harassed by this multiform demand, he would spend his time updating his knowledge and would in fact operate like a chronically delayed railway service. The instructor's role remains conceivable in sectors which are entirely or partially free of such constraints, basic learning in particular. This no longer solely consists of French, maths or languages; for instance, there are now basic it, office automation and robotics.

Distance education is thus seen as a new type of channel linking the store of knowledge with those who want it. The concept of distance has a spatial component, namely the geographical distance between the institution and the customer, plus an element of time, namely the lag between the "canning" of the knowledge and its consumption. The "can" is now a written document, a software pack or an audio or video cassette, as the transmission of knowledge increasingly relies on some electronic medium.

The canned knowledge metaphor is not chosen at random; in employment, it is more and more common to learn as the need arises, for instance in order to use a new office automation device or numerically controlled machine, and not just to work towards a certificate. Any new device appearing in a secretariat or workshop creates a discrepancy of knowhow which must be promptly made up. A typical feature of this new form of demand is in fact that it requires immediate fulfilment.

Chapter 3

The role of the media in self-instruction

The media concept is central to the development in hand. For the past 20 years, large stocks of media-based training material have been built up without their production being consistently guided by a clear conception of their potential use. And indeed their use has been strictly limited. This is now changing, as if public opinion suddenly conceded that learning can be carried out by drawing on the stockpiles, whereas it was long unreceptive or even hostile to this idea.

- Learning through the media

In 1913 Thomas Edison stated his opinion that in ten years all teaching would be done by film. His predictions were not supported - far from it - by intellectuals, who until recently denied this medium any educational function. Jean Piaget, the father of genetic psychology, whose opinions were closely heeded by education specialists, had no faith in it. Today things are changing, the chief reason apparently being that many homes, in addition to the inevitable television set, own a video recorder or even a micro-computer. This imperceptibly familiarises users with data processing devices and their visual display units: obtaining a piece of information, booking a train ticket or changing a floppy disk are experiences which go to make up a new culture. This underlying technological experience is vital in accepting the idea that it is possible to learn with the media, and this is what is happening. In its "Aspirations" survey of January 1986, the CREDOC (Centre for Research, Studies and Documentation on Consumer Habits) recorded that 51% of households expressed readiness to spend one evening a week watching educational television programmes (CREDOC 1986).

The INSEE-FRANCE-TELECOM survey carried out jointly by the National Institute for Statistical and Economic Research and the telecommunications authority in 1989 shows that 8.5% of French households have a micro-computer and 12% use educational software.

The development of instructional media does not imply that the human instructor is doomed to extinction, but rather that his function is destined to evolve by force of circumstance. He no longer conveys that fund of basic knowledge but helps people to assimilate it. He answers the hard questions. In distance teaching, the great utility of the telephone is therefore emphasised: course participants call a teacher to help them out. Nor does it spell the disappearance of the written document, which remains the basic course resource, although its medium will evolve in the years ahead. A CD-ROM, a laser disk on which alphanumeric information is recorded, has a capacity (600 megabits) such that it will hold an entire course or even a full curriculum.

However, the manufacture of this kind of medium can no longer be a small-scale affair. This original field of exchange of knowledge is of an intrinsically industrial nature.

- Industrial production of training media

Today there are numerous stocks throughout the world, some very large, as for example the PLATO computer-assisted instruction system because the initial work commenced in 1965. Over the same period, correspondence teaching - as distance teaching used to be called - was producing self-instruction documents which made use of the written medium. It had few relations, at least in terms of visible effects, with the researchers working on the media adaptation of computer-assisted or audiovisual instruction. Things have changed now, however; distance education has numerous stocks of written material and is linking up with the information technologies, as demonstrated by the achievements which will be discussed below.

It is fair to ask whether, in the light of the foregoing remarks about the rapid obsolescence of content, these stocks are not valueless. This is an awkward question which in any case cannot be straightforwardly answered in the affirmative, for obsolescence is a relative concept. Some kinds of content which are outdated for one branch of industry or geographical area may prove very useful under different circumstances. However, there is also the risk that certain underprivileged countries may be offered educational surpluses without real value.

The scale of the efforts and investments by the European Communities, eg 250,000 ECUs for COMETT II, preceded by what were already substantial funds for COMETT I and DELTA, should normally stimulate an appreciable growth in the stock of available educational media.

However, it is by no means certain that the concept of industrial production of training media and services has found its way into all the projects being developed. This production departs from academic custom. The establishments which carry it out are becoming more and more like service distribution industries such as mail order houses or television channels.

- How reliance on the media affects institutions

Media are expensive to produce and there seems to be no question of covering the required investments entirely with state subsidies whatever the country. This has three main consequences:

- any production must achieve a corresponding return on investment. This presupposes that it relates to a market, a population sector for instance, or an area of profitability specified beforehand, such as a transaction assisted by regional funds or by an occupational branch. That in turn entails market research and consumer satisfaction surveys, procedures which are out of the ordinary in present day distance education institutions. Some recent studies nevertheless prove the considerable value of this approach. They reveal markedly different attitudes in male and female course participants. At ATHABASCA UNIVERSITY, female students make better use of the institution's resources, attach more importance to acquiring qualifications and take a more serious view of failure in the opening course than the male students (ROSS and POWELL, 1990). At the FERNUNIVERSITÄT (Federal Republic of Germany), women's reasons for

enrolling, far more so than men's, are self-appraisal and greater self-satisfaction, intellectual stimulation and anticipation of occupational misadventure (VON PRUMMER 1990).

The study of the FERNUNIVERSITÄT enrolment also indicates an alarming contradiction between the motivation of students enrolling the goals which they achieve there. So far, the institution has considered those who do not pass the examinations as having experienced a failure. The survey shows that many of them think quite the opposite and consider that they have attained their objectives, ie in their opinion to gain broader experience and intellectual stimulation. Nevertheless, a failure cannot be regarded as proof of such ability, so that a semantic inconsistency arises between the institution and its enrolment (VON PRUMMER, 1990).

The return on investment criterion also presupposes careful analysis of the production and operating costs so that the institutions can make strategic choices regarding the media to be used: satellite or telematics, video or software, for instance The National Distance Education Centre in Dublin has framed its media policy by identifying the exact costs of producing and using each medium (CURRAN 1990). The centre sub-contacts its production of printed matter because it does not have a mass production warranting a printing shop of its own. It uses the radio service to supply the enrolment with information and publicise the courses. It concentrates reference material in resource centres scattered throughout Ireland where students may consult the video cassettes which it produces. Use is made of the television programmes produced by OPEN UNIVERSITY and EuroPACE.

In more general terms, to reduce the overheads the Dublin NDEC has introduced a policy which can be summed up as follows:

- to intensify co-operation with other universities;
- to use external resources consisting not only of teaching material but also of premises, using university premises as marshalling points;
- to expand computer-aided publication. A standard course blueprint has been developed for this purpose, thus automatically cutting the cost of setting-up;
- to computerise administrative management.

Such action enables the NDEC, with a small team of 15 permanent staff, to cater for an enrolment which was originally 2,500 and now verges on 6,000.

- A quality control policy must be introduced. A heavy investment cannot be hazarded on a training content of dubious quality. Institutions which have embarked on such operations have adopted polices of excellence. One instance is the OPEN UNIVERSITY which has internationally reputed laboratories dealing with the sciences of the brain in particular. A second is the EuroPACE system which has committees of specialists for each of its operational sectors. The participants are chosen according to the usual appointment procedures applied by the scientific community.

- Suitable administrative methods must be adopted. Distance education has a production component (written documents, media) and a service component (centralisation, liaison with the enrolment, correction of exercises, etc). The introduction of the media into these two fields of activity greatly complicates a task which was not at all simple even when only written documents were involved, and the difficulty is compounded by the considerable increase in the enrolment. This is the whole point to setting up a strong management sector comparable to those equipping the distribution industries. The CNED at Rennes forms an interesting model in this respect, being so designed as to produce and distribute distance courses via three main media: documentary material, video cassette and telematic relay. The centre's relations with the students are managed entirely by computer, in a most original way. On enrolment each person is assigned an identifying bar code reproduced on a large number of adhesive labels which he affixes to all mail, whether correspondence or exercises. The centre is equipped to machine-read the labels, considerably reducing recording time. Each student also has a very full personal data file in the computer memory, containing his various interchanges with the centre. Those in charge have observed that the increased speed of the exchanges was a factor in acquiring goodwill.

As an adjunct to the modernisation of management, institutions should commence market research and sales activities, failing which the products and services are unlikely to attract much notice. They also need to introduce a forecasting policy having regard to the output plan of the production sectors. The OPEN UNIVERSITY is currently preparing the content of certain courses which will be distributed from 1995 to 2000.

Chapter 4

A new comprehensive infrastructure for Europe

Distance education is now imbued with the characteristics of the media on which it relies, and nowhere more than in distribution, one of the hardest questions to handle among all those confronting it. This is firstly because it depends on media-related choices which, apart from their economic aspects, have long-term structural effects, then because distribution can follow various patterns. Distribution to individuals, which still applies in most cases, is only one of several.

The traditional structure of distance education establishments reflects that of schools and universities in that it allows direct links between staff and students. However, the concept of the class group is lacking. This is sometimes replaced by geographical groupings. Nevertheless, over the past ten years or so the involvement of various media has allowed new forms of organisation to be tried out. Five of them seem to have special potential for the future: resource and grouping centres, satellite distribution, horizontal communication by telematics, European nerve-centres and major international associations.

1. Regional resource and grouping centres

Some institutions have elected to make hardware such as computer or video available to students not at home but at pooling points where they can also benefit from the skills of instructors. This is the practice of the Dublin NCDE which does not launch a course in a region unless it has a support centre there beforehand. One instructor supervises 15 students. In France, a study of the Loire region showed that most people working in SMEs were unwilling to travel over 50 kilometres to attend continuing training courses. The promoter of the operation launched in 1986, the ARCNAM, encouraged medium-sized towns (some 10,000 residents) to invest in grouping centres located in their secondary schools where the course participants come regularly to be trained in the use of information technology. Six centres are in operation and five of them are programmed. They are equipped with micro-computers, laser printers, CD-ROM reading devices and have telecommunications facilities. Local activity leaders assist the trainees, but they can also hold direct or deferred dialogue with teachers based at at the CNAM branch in Nantes. The same philosophy of centralisation occurs in Denmark in the operation co-ordinated by the AARHUS centre and in the new approaches of the OPEN UNIVERSITY as regards computer-assisted teleconferences. The BARI TECNOPOLIS (Italy) is also a resource and grouping centre, though on a different scale, designed to further the industrial development of the region.

2. Satellites for training

Here the geographical range is no longer the region but part of a continent. Four operations are currently being developed: EuroPACE with the EUTELSAT satellite, EUROSTEP and EuroTransMed, both with the OLYMPUS satellite, and Channel E with the ASTRA satellite.

EuroPACE has 120 reception points in Western Europe and makes English-language broadcasts in the following scientific specialities:

- software engineering;
- expert systems and artificial intelligence;
- telecommunications;
- microelectronics;
- advanced manufacturing technologies;
- technology management.

During its first year of existence, EuroPACE transmitted via EUTELSAT 350 hours of fifth-year tertiary courses given by about 100 European, American and Japanese specialists. EuroPACE has "chapters" in Germany, Denmark, Spain, Greece, Finland, France, the Netherlands, Italy, Norway, Sweden, Switzerland and Turkey. The organisation is now opening relations with the East European countries. The aim of EuroPACE is to assist in redistributing technical knowledge in industry. We have already seen, for instance, that the Dublin NCDE uses the EuroPACE broadcasts for inclusion in its own courses. Indeed, this is how the use of training by ordinary satellite transmission can be envisaged, ie as an external resource to back up a local training operation (the annual subscription amounts to 70,000 FF.

EUROSTEP based in Leiden (Netherlands) is the present organisation of the OLYMPUS satellite users. It is currently endeavouring to establish itself as the educational channel for Europe. Numerous teams from EEC member countries have put forward production programmes. A recent agreement with the RAI (Italian Broadcasting Authority) has provided the organisation with a transmitter which extends the reception of the OLYMPUS satellite towards the East European countries, particularly Greece and Yugoslavia. The programmes transmitted by OLYMPUS will be of four kinds:

- open university;
- special purpose programmes;
- secondary education;
- cultural and news items.

EuroTransMed concentrates on the development of medical education via the OLYMPUS satellite. This organisation based in Leiden aims chiefly at general practitioners and final year medical students. It offers scientists two-way teleconference facilities.

With incentive from the EEC DELTA programme, Manchester University has an allocation of satellite transmission time on ASTRA, one channel of which it shares with a Netherlands broadcaster the VNU and with the Luxembourg based Fondation Internationale pour

l'enseignement par ordinateur dans les banques (International Foundation for Computer-Based Education in Banking and Finance). This is called "Channel E" and will transmit programmes concerning:

- employment of opportunities for young people in the EEC countries;
- continuing training in the banking sector;
- foreign languages;
- migrant workers' training.

The satellite can also be used in two-way communication, by "visualtransmission" to be exact. This term refers to a transmission technique sending a signal which is less refined than the normal television one but nevertheless adequate for a business exchange. One French bank, the BRED, has been using such an apparatus for a year at the rate of four hours a day to train bank executives in its Caribbean agencies. The hourly operating cost of two-way transmission, according to its manager, has been significantly low - in the region of 700 FF (BERNEAU, 1989).

3. Telematics and remote data networks

The use of communication systems linking micro-computers is expanding considerably in the United States and Western Europen in the field of distance education, according to a very full recent study by the OPEN UNIVERSITY (1).

The current or completed projects recorded by this study are as follows:

- Federal Republic of Germany	1	
- Belgium	1	
- Denmark	1	
- Spain	4	
- Finland	2	
- France	9	(2)
- United Kingdom	19	
- Netherlands	1	
- Italy	4	plus the Mezzogiorno one
- Norway	2	

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(1) For a comprehensive survey of these systems see Robin Mason, Editor, The Use of Computer Networks for Education and Training, Institute of Education Technology, The Open University, Milton Keynes, 1989.

(2) For France, let us add the many educational electronic mail services eg the Bordeaux INTERETUD (CRDP - regional centre for educational documentation), SOS PROF, COGITO (CNED) and the University of Aix-Marseille.

Also taking into account the four major systems encouraged by the EEC: EuroPACE (1), EUROKOM (2), EPOS (3) and Head III of the DELTA programme (4), a good 50 operations are under way at present.

In France, the general spread of MINITEL has hastened the expansion of its use in training. At present, according to the 1989 INSEE-FRANCE-TELECOM survey, 0.5% of French households use it for this purpose. The trend in its use at the CNED (National Distance Education Centre) is as follows:

Year	Total calls	Total hours
1987	5,335	352
1988	171,360	12,433
1989	305,159	27,811

The services offered relate to consultation of the training catalogue, enrolment requests, modern language tests, consultation of data bases and use of electronic mail services. These enable the students to put questions about their course to their tutor who replies within 24 hours by filling in a suitable "letterbox" grid. This service is making a big hit because it gives students a helping hand at any time as well as a person-to-person contact.

Some highly interesting experiments provide for horizontal contact between students. This is the field conventionally referred to as "computer-conferencing" (CC). One of the most innovative operations was conducted at Aarhus (Denmark) as part of co-operation between the Aarhus Technical College, the Danish Computing Centre for Research and Education and the Jutland Institute of Technology.

Various training arrangements have used the possibility of vertical interaction (ie with instructors) and horizontal interaction (ie between students):

- technical teachers' course in maths and IT;
- tax officials' course;
- course in health and environment policies for specialist staff.

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(1) Satellite transmission of advanced technology courses given by the leading specialists. Based in Paris. France Télécom carries out the distribution and Pacecom looks after the interaction. The GSI company offers a dispatch centre which brings the back-up programmes to the users.

(2) Dublin based remote communication organisation designed to assist communication between the teams involved in the EEC ESPRIT programme.

(3) The SIP, Deutschebundespost and Telefonica are setting up an integrated teaching system based at the OPEN UNIVERSITY under the DELTA programme.

(4) EEC programme aimed at establishing a Europe-wide transmission complex for distance learning.

The layout of this interaction system makes it possible to adjust the general organisation of distance education. Course design makes use of the interaction technique in enabling specialists to confer at a distance and taking students' comments into consideration (SHAPIRO 1990). The current operational method makes it possible to build up data on user behaviour and the successive alterations to the system.

The OPEN UNIVERSITY is introducing a similar policy. The primary aim is to improve student guidance. At present, the 120,000 students enrolled in the OPEN UNIVERSITY are attended to by 5,000 tutors. However, tutors and students are very isolated at present and seldom have the opportunity to come into contact. A computerised system called COSY has been set up, with the following facilities:

- person-to-person electronic mail;
- "desynchronised" conferences or group relations;
- a forum or provision for informal communication;
- a directory of members of the network;
- a list of available lectures;
- an edit routine for page layout on screen;
- teleloading procedures.

This multipolar network allows students to make random contact (serendipity) and to hold protracted discussions of several weeks' duration. It has the major virtue of aiding communication between students which was not possible under the traditional distance education structures (KAYE, MASON and HARASIM, 1990).

These computer systems such as COSY or the EIES 2 system developed in Denmark are on American patterns such as ICE or PARTICIPATE. Large-scale experiments have been conducted at the New Jersey Institute of Technology and the Ontario Institute for Studies in Education.

In France, the University of Paris IX has been using the PARTICIPATE system on a trial basis for three years to teach sociology students (Professor M GUILLAUME). The CNED has used a comparable system to link some groups of its staff in training as multi media project leaders. Certain difficulties arise in practice, chiefly:

- the opposition of some institutions, particularly schools, to direct linking of their pupils with those of other schools;
- computer illiteracy in many adults who are nonplussed by this means of communication;
- difficulties with written expression in many cases.

Yet the most significant advantages of this type of interaction should be set off against the drawbacks:

- higher active participation by trainers and trainees;
- training of individuals in group work, as certified by the firms already using the system (MASON 1989).

Even if certain functions of computerised systems need to be made more flexible, this horizontal basing of communication offers new prospects. Mutual aid is possible as in classroom education. A student does not always need to ask his teacher for help; fellow students can step in.

Over and above prompt assistance of this kind, it is possible to contemplate genuine mutual training which would at least partly rely on this process. As stated above, the rate of production, specialisation and obsolescence of courses is becoming so rapid that in some cases no sector of face-to-face distance education will be able to keep up. Thought might be given to opening specialised single topic conferences in which training supply and demand would converge, the source of supply being not only specialised instructors but also persons qualified in some way. Thus computer conferencing will provide a "lateral" inflow for continuing training.

4. European nerve centres of distance education

Under the influence of European programmes such as COMETT and DELTA, many partnerships have been formed for joint production of media, software and distance training courses with a European slant. This gives rise to the organisation of production sites where the resources made available by all concerned are assembled. One of the first if not the very first European nerve centres of distance education came into being at Rennes on 5 February 1990. Under the aegis of the CNED, its task is to produce in a European perspective high level skill training courses in keeping with corporate requirements and with personal education and advancement. The courses should use the most suitable multi-media techniques for reaching the target public individually and at a distance. The system brings together administrative officials (Prefect, District Director of Education), university vice-chancellors and political representatives (Council of the Region and Département). This achievement is the culmination of several years' co-operation on biotechnology carried out by the Rennes team with five countries, Belgium, Spain, Ireland, Italy and Portugal.

Organisations such as COMETT-OUEST at Nantes or TECNOPOLIS at Bari are like structures with similar objectives. The appearance of these new facilities coincides with the establishment of European academic poles elsewhere. In a context of development, it might reasonably be assumed that they may become infrastructures serving the internationalisation of universities.

5. Major international organisations

Distance education institutions have been amalgamated into international associations for a very long time. In recent years, under the stimulus of the media revolution in education, there have also attracted non-academic agencies, in particular media-makers and media-users, ie bodies representing regional authorities and business.

Some of these organisations are wholly devoted to a single medium, eg EUROSTEP, EuroTransMed, CHANNEL E and EuroPACE where use of satellites is concerned, or the International Foundation for Computer-Based Education in Banking and Finance which concentrates on educational computer applications.

Others, however, have a more pronounced academic orientation, in particular:

- the EADTU (European Association of Distance Teaching Universities) based at Eerlen (Netherlands) and incorporating a dozen higher education institutions in various European countries: Belgium, Denmark, Spain, Italy, Norway, Netherlands, Portugal, Federal Republic of Germany and United Kingdom. Its aims are to run the network thus formed, to develop research within it, and to foster European equivalence of training. The EADTU has put in hand courses in the fields of language learning, management, European law and European culture.

- The SATURN network, also founded in 1987, brings universities into contact with firms for vocational training purposes by means of new technologies and distance teaching. It includes representatives from Belgium, France, Norway, Federal Republic of Germany, Netherlands, Portugal, United Kingdom and Switzerland.

Some world organisations also have a significant European element, as with the International Council for Distance Education.

- Systems incorporating the human aspect

The systems discussed above are typified by a reliance on technology which in no case rules out human intervention but may place it at another level in the teaching relationship. When a student uses a computer, he does so in an grouping centre. That of course does not preclude individual use of a home video recorder or computer, but in that case the possibility of communicating with others through various telecommunication systems is available (or soon will be).

This makes a striking change from the previous wave of projects concerning educational technology which, some 15 years ago, often excluded any action by a teacher and made a machine responsible for the entire relationship. That time is past. The reinstatement of the human being is a sign of maturity and offers hope for the comparative stability of the emergent system. This consideration of the human aspect furthermore converges with the observations made by marketing specialists, who have noted the failure of all fully automated sales systems and by the same token the success of composite systems employing human interaction (LOVITON 1989).

Chapter 5

A new function: ordering the European distance education dimension

Action in this connection, whether by the EEC, national governments, regional authorities or institutions and firms has undergone a substantial increase in the last five years. There were several thousand replies to the recent COMET II call for tenders. Thus it is still hard to gain a clear idea of where the current process of change will lead. The present study makes some contribution in this respect by identifying a new infrastructure for the European educational dimension.

A process of transformation is indubitably occurring, as it displays relationships which did not exist in the traditional academic systems, particularly with the media, with the production sector and with other countries, three features of the COMETT operation in fact. International partnership is an innovation which has an eminently structural effect.

These three considerations, internationalisation, link with production and conversion to the media do not have equal importance in the process. The driving force is inarguably the awareness gained by all concerned of the true scale, adverted to in Chapter I, of training problems.

The problems firstly affect higher education which in some countries is undergoing conflicting trends with a growing number of students to be trained and a decreasing number of teachers to train them. Secondly, they affect continuing training which will have considerable numbers to cope with, out of all proportion to those handled so far. It is therefore fair to say that the necessary arrangements must be tailored to those requirements. The logistics provided will make it possible - by incorporation - to deal with the specific problems of production and dissemination which are peculiar to higher education.

However, it would be mistaken to leave the existing situation out of account at the commencement of this transformation process. The overwhelming majority of European countries possess institutions which are well tried in distance education, but they cannot undertake the transformation process unaided, for the following reasons:

- Demand for scientific and technical training is increasingly large and diversified. Course content is quickly outdated. It is therefore hard for the conventional institutions to have at hand for the required period the specialists who are needed. Associations with specialist groups are then necessary, hence the partnerships.

- The consumers are more and more demanding. They want constantly updated courses and prompt replies to their questions, so that institutions are compelled to adopt operating methods which make them more akin to television channels than to educational establishments. Nor can they cope with this radical transformation alone.

- They have to live by two different principles at once. One concerns distribution and applies to isolated people working at home. This is the oldest service but is also made more difficult to manage by the media aspect. The other concerns goals. Certain agents strongly involved in the current tendency, especially regional authorities and major industrial groups, do not have the cultural felicity of isolated individuals in view but rather the large-scale skill training of certain workforce sectors. This implies the consolidation of success factors, the organisation of combinatory infrastructures, canvassing and forecasting, in fact a whole series of functions to be enhanced, which conventional institutions cannot do at a constant resource level.

- The components of the new pattern

An effort can be made to outline the emergent new situation. The conventional distance education institutions are distinguishable in this landscape, but they are surrounded by new peripherals ie the multi-media production centres and the regional resource and grouping centres. New locations are appearing on the map, namely the European nerve centres which bring together in a given locality the varied potential for providing Europe-wide services. Many of these locations, whether they represent the conventional institutions or the new European centres of excellence, are in the clusters formed by the major international organisations.

Turning to the principal spatial links, the first is provided by satellites which in most cases still operate in a vertical, one way transmission context (cf MERCIER, 1989). The second is horizontal and interactive and hence an adjunct to the first; it consists of electronic mail services and computer-aided teleconferences (MAZZUCCA and ZACCARO, 1988). Thus a new technical system linking any one point in this universe with the overall context is clearly seen to be taking shape. According to historians of technology (GILLE, 1975), the satellite and computer technology providing the horizontal and vertical links at a general level will support each other in achieving balanced and consistent development. Co-ordination with the local level is handled by the grouping and resource centres which under the new system take care of the localised management. Such a transformation of infrastructures cannot go ahead without a corresponding development in legislation and regulations.

- Development of legislation and regulations

Unless care is taken, technology will yet again outstrip progress in legislation and regulations, which nevertheless give it vital support and supervision. Certain statutes have opened the way.

Article 35 of the Italian Constitution stipulates that the Republic shall be responsible for the vocational training and education of workers. Decree No. 382 of 11 July 1980 accordingly enables universities to extend their services to users other than students and to conclude agreements with outside partners for the purpose.

The French law of 1971 introduces a corporate turnover tax to finance continuing training activities.

The European Social Charter could suitably create a legal framework for the progress needed. However, one legislative text has gone a step further towards the system in question, the Italian law No. 64 of 1 March 1986.

This text is designed to foster economic and social development in the Mezzogiorno. Sections 10, 11, 12 and 13 provide for the consolidation of a development assistance fund set up under the law of 12 February 1982 and for significant tax concessions to craftsmen and SMEs for the purchase of high-tech machinery and production equipment, the furtherance of applied research programmes, aid to investments for the purpose of securing new technologies relating to new products and new production processes, and for the funding of innovations in respect of organisation, marketing, management and projects to achieve more rational use of energy and raw materials (Section 10 para. 4).

This statute has indeed led to the establishment of research and training centres gathered together in the TECNOPOLIS CSATA at Valenzano, Bari Province. The pronounced link between research and training is worth stressing as it is still indistinctly marked in the overall system which is emerging in Europe.

A further aspect of legislation is that the lack of harmonisation of copyright law complicates the circulation of printed matter as well as audiovisual works. A specific study on this question should be put in hand.

Regulations apply to various sectors:

- equivalence of diplomas. This is a major concern of the EADTV, being an obstacle to the spread of European distance education for diplomas;

- laying down international standards for educational software and multi-media products, for which there are specialist committees within the International Standards Organisation (ISO);

- establishing standards for the high definition television signal used in satellite transmission. The D2 Mac Paquet standard is generally accepted but at present clashes with the intermediate standards issued by certain manufacturers and with the Japanese standard, for which sets will be available on the market as from 1991.

The outlines of the Council of Europe's response to this change in the landscape in terms of both infrastructure and regulations are clearly perceptible.

Chapter 6

Action by the Council of Europe

A major political objective for the Council of Europe emerges at the conclusion of this analysis. Its place is to foster balanced development of the new overall distance education system in all its member countries. The policy required to achieve this comprises the following elements:

- research, study and training for a more thorough knowledge of the current trend and in order to bring operators up to a common standard;

- organisation and information to foster mutual knowledge among the various agents concerned;

- framing of regulations as an aid to the establishment and harmonisation of systems.

1. A study, research and training policy

The general aim to gain a clearer conception of the development which is occurring, to harmonise the new and the old arrangements as required and to detect imbalances between countries or regions so as to devise the necessary remedies. The following instruments might be used:

- commissioning of specialised studies on certain as yet unclarified aspects such as a policy to safeguard quality or even for quality labelling of distance education products and services;

- the organisation of specialists' symposia, especially in the East European countries, to discuss their situation in relation to the new system which is emerging in Western Europe, with special attention to the use of satellites;

- university summer courses to assist the transfer of knowledge should be organised over a period of several years. An initial course might deal with the general theme discussed in this study, with the persons consulted taking part;

- incentive to universities to provide specialised training in distance education. The European Conference of Rectors and Vice-Chancellors of European Universities might be informed of this intention;

- incentive to research laboratories dealing with educational methods as well as communication technology to concern themselves with this sector.

2. An organisation and information policy

The Council of Europe comprises the member countries of the EEC and the EFTA and is preparing to receive many East European countries. It is a golden opportunity to accumulate information on training needs and existing arrangements and promote its circulation, through the following action:

- creation of a documentation network dealing with this activity. Here, interfaces with other organisations such as the ILO, the EEC and UNESCO would need to be provided. The "major

organisations" could make a substantial contribution to this function in a manner to be specified. The documentation could be kept under comparison with the constantly evolving requirements;

- sponsorship of particularly meaningful pilot schemes. It seems that these should also have symbolic value and demonstrate the potential for Europe-wide solidarity offered by the Council of Europe. Consequently, sponsorship of a satellite operation and a telematics network for horizontal communication seem particularly apt. They would bring out the full significance of the resolve of the very remote Eastern European countries to be included in this educational interaction.

3. A policy on regulations

The Council of Europe's role is especially valuable in this respect. It should encourage member countries to take the following action:

- to adopt common approaches in the international agencies responsible for laying down standards on educational technology, particularly the ISO, so as to strengthen Europe's position in the world concerning political, industrial and social issues which will be of major importance in future;

- to foster the harmonious development of telecommunications policies, particularly in respect of the use of satellites;

- to make appropriate use of TV broadcasting facilities as relays in training systems.

Lastly, the Council of Europe should urge member countries to frame vocational training legislation giving this type of training full recognition.

4. Policy requirements

The application of the media to training presupposes large investments for producers, thereby prompting them to seek a return on their investment. This will be recovered either by increasing enrolment fees, which is often the case in continuing training, or from an additional grant, particularly when a regional authority or a branch of industry is involved under a project arrangement. The scale of investments made over the last five years for multimedia conversion is unknown for Europe as a whole. By way of an indication, the COMETT 1 and DELTA programmes represent some 60 million ECUs, but this is only a fraction of the overall investment. The COMETT II programme will lavish some 250 million ECUs on this type of activity. Two conclusions can be drawn from the foregoing:

- the aggregate finance for the commencement of this type of activity is generally assured even if very large disparities persist for some countries and will be most marked where the East European countries are concerned;

- the question of return on investment, however, remains open. The production and distribution system, we have seen, has reached out all over Europe and also to Africa, although this does not

come within the scope of the report. Yet each producer, whether a national institution or "European nerve centre" is usually unaware of the geographical range of the requirements they can meet and how they can advertise their products beyond their accustomed sphere of action.

The policy suggested above is in line with this consideration. Investments have been copious, often chaotic, there is a profusion of agencies and at present nobody understands the situation very clearly. The Council of Europe can help clarify it, identify the various types of agents, determine the needs and indicate products and services to meet them.

It is therefore not a matter of a funding policy but rather of an information policy which can make do with slight financial resources, the idea being to establish contact among the persons involved, suggest new functions to existing major organisations and arrange symposia and university summer courses.

Major organisations using the satellite medium would indubitably be eager to accept the Council of Europe's patronage.

A programme with an independent budget should be devoted to the management of these operations. The only investment of any size would be to build up the documentation network - which could indeed form a pilot scheme.

5. A pilot scheme: opening up the distance education dimension of the wider Europe

The Council of Europe's hallmark is the wider Europe. This large geographical and political dimension comprises countries generally unfamiliar with each other and specifically in the training field, most of all the East European countries. A period of mutual acquaintance is beginning for an indefinite duration which will foreseeably be very long. The various agents of education and training in those countries therefore need to be offered:

- means of transmitting and receiving information over long distances by the vertical link;

- means of conducting direct dialogue by the horizontal link.

The Council of Europe could promote such a venture. The first of the above services exists and is provided by satellites; the Council would simply need to sponsor a major organisation using this mode, and some have expressed readiness. The second service, however, is just being set up. Consequently, a new organisation for which the Council of Europe might be the instigator should amalgamate the 50 or so operations now developing which make use of electronic mail and computer assisted teleconferences. Some of these projects concern the East European countries, especially the USSR, for instance the GLOBAL DIALOG network being devised in Moscow with the assistance of British experts. The Ukraine should also be mentioned as it has asked the international scientific community for assistance with training in protection against ionising radiation.

This association in the form of a built-up network, could take charge of the documentation policy referred to in para. 2 above. It would thereby benefit not only from advertising of products and services but also, as an innovation, from users' requests since they also employ such networks.

The financing of a project of this kind requires investigation. It includes no expenditure on technological infrastructure because the facilities exist. However, it is certain that many institutions, regions and firms would contribute to its funding because they would see its potential for something still undone but becoming indispensable: the opening up of the European distance education dimension.

CONCLUSION

In addition to the Resolution 1110 of the Council of Europe on distance teaching, the concept of an "European TV-University" was developed since 1971, in the light of the diversification of education, of the documented and foreseeable growth of actual interests and in the light of the considerable development of the means of telecommunication. Therefore, nowadays it is necessary to establish open university resources and centres of specialisation.

The analysis offered in this report contributes to identify a new organisation of systems of distribution and exchange into distance teaching. This is due to the acknowledgement of significant dimensions of training needs, in university and continuing education, and to the irreversible recourse to the media. However, this organisation is still far from being perceived clearly by the agents and it has not yet reached a state of stability. Moreover, the analysis that highlights it ought to be discussed in depth.

For various reasons, it is urgent to organise a colloquium on the subject whose starting point could be this report. It could take place at the end of June 1990 in Strasbourg, as a follow-up to the colloquium dedicated to the strategies of professional distance training organised by the centre. The participants may be those persons who were especially consulted for this work. A second meeting should follow. It should take place in an Eastern country in order to highlight the differences among the various existing infrastructures.

Additional meetings should follow designed to deal with other cultural aspects, the southern countries as well as the mediterranean and latin-american areas.

A permanent working group should set this timetable. The putting into action should also be prepared, the plan of action should be executed and followed as it was held. It should establish what could be the committee for distance teaching set up in Resolution 1110.

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